

1. An AC-DC converter comprising:

a) a low impedance AC source providing an alternation of a positive voltage, a negative voltage, and a dead time;

b) a bridge having a first, a second, a third, and a fourth rectifier, said bridge having a first input terminal, a second input terminal, a first output terminal, and a second output terminal; wherein,

the first rectifier is connected between the first input terminal and the first output terminal, a cathode of the first rectifier being connected to said first output terminal,

the second rectifier is connected between the second input terminal and the first output terminal, a cathode of the second rectifier being connected to the first output terminal,

the third rectifier is connected between the second input terminal and the second output terminal, a cathode of the third rectifier being connected to the second input terminal,

the fourth rectifier is connected between the first input terminal and the second output terminal, a cathode of the fourth rectifier being connected to the first input terminal,

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(c) a capacitor connected between said first output terminal and said second output terminal; and

(d) an inductor connected between said AC voltage source and said first input terminal.

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4. The converter of claim 1 wherein the current flowing through said inductor reaches zero before the voltage produced by said voltage source changes its polarity.

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5. The converter of claim 1 wherein the current flowing through said inductor does not reach zero before the voltage produced by said voltage source changes its polarity.

6. The converter of claim 1 wherein the said voltage source changes its polarity after the current through said inductor reaches zero and is delayed until the voltage across the rectifiers which will conduct on the next cycle reaches zero.

7. The converter of claim 1 further including a bi-directional switch connected between said first input terminal and said second input terminal, said bi-directional switch being responsive to a control voltage synchronized with said AC voltage source.

Claims 1 and 4 - 7 have been amended as shown below in marked-up form:

--1. An AC-DC converter comprising:

a) a low impedance AC source providing an alternation of a positive voltage, a negative voltage, and a dead time;

b) a bridge having a first, a second, a third, and a fourth rectifier, said bridge having a first input terminal, a second input terminal, a first output terminal, and a second output terminal[, said first output terminal communicating with said inductive element]; wherein,

the first rectifier is connected between the first input terminal and the first output terminal, a cathode of the first rectifier being connected to said first output terminal,

the second rectifier is connected between the second input terminal and the first output terminal, a cathode of the second rectifier being connected to the first output terminal[;],

the third rectifier is connected between the second input terminal and the second output terminal, a cathode of the third rectifier being connected to the second input terminal,

the fourth rectifier is connected between the first input terminal and the second output terminal, a cathode of the fourth rectifier being connected to the first input terminal,

[wherein said AC voltage source is connected to said inductive element and the first input terminal;]

(c) a capacitor connected between said first output terminal and said second output terminal; and

(d) an inductor connected between said AC voltage source and said first input terminal.

4. The converter of claim 1 wherein the current flowing through said [inductive element] inductor reaches zero [level] before the voltage produced by said voltage source changes its polarity.

5. The converter of claim 1 wherein the current flowing through said [inductive element] inductor does not reach zero [level] before the voltage produced by said voltage source changes its polarity.

6. The converter of claim 1 wherein the said voltage source changes its polarity after the current through said [inductive element] inductor reaches zero and is delayed until the voltage across the rectifiers which will conduct on the next cycle reaches zero [voltage].